

State and Local Climate Change Partners

November 19-22, 2002

Integrating Energy Environment & Transportation

NJDEP's Greenhouse Gas Program



www.state.nj.us/dep/dsr/gcc/gcc.htm



- **8,414,350 people**
 - **8,722 square miles**
 - **35,921 miles of roadways**
 - **127 miles of shoreline**
 - **24.5% Urban/Suburban**
 - **13.1% Rural/Farmland**
 - **29.2% Open Space/Forest**
 - **14.4% Wetlands**
 - **18.8% Open waters**
 - **19% of State in permanent preservation**
-
- **From 1995 aerial photo data**

New Jersey GHG Action Plan Stakeholder Work Group

**NJ Department of Environmental Protection
NJ Department of Community Affairs
NJ Dept of Transportation
NJ Transit
NJ Board of Public Utilities
NJ Economic Development Authority (EDA)
NJ Department of Education
NJ Energy Utilities
Partners for Environmental Quality
NJ Higher Education Partnership for Sustainability
NJ Association of Counties
NJ Solid Waste Council/County Coordinators
National Resource Defense Council
Environmental Defense Fund
NJ Clean Air Council
NJ Petroleum Council
NJ Business and Industry Association**

New Jersey GHG Action Plan

**Road map to achieve the NJDEP goal for GHG reduction
Documented that the NJDEP goal was achievable**

No-regrets strategies – Cost effective strategies

Strategies

- **Energy conservation**
- **Innovative Technology**
- **Pollution Prevention**
- **Waste Management/Recycling**
- **Open Space**

Sectors

- **Residential**
- **Commercial**
- **Industrial**
- **Transportation**
- **Government**
- **Agriculture/Land Use**
- **Government**

New Jersey GHG Action Plan

Transportation-sector

EC and IT strategies

- **Enhanced Inspection & Maintenance Program (0.86 MMT)**
- **Established AVF/ATV Task Force**
 - **Co-Chaired by NJDEP & NJDOT**
- **Increase State fleet AFV**
- **Expand state AF fueling stations (0.24 MMT)**
- **Mass Transit Improvement (0.63 MMT)**
 - **New station to increase ridership Hamilton/Newark/NYC**
 - **New light rail service Camden to Trenton**
- ***Expand Biofuels made from waste materials (0.24 MMT)***
- ***Support research for ATV hybrid/fuel cells***

Italics indicate projects that are not current

Signatories to the New Jersey GHG Action Plan

NJ Dept of Community Affairs

NJ Dept of Transportation

Dupont

Johnson & Johnson

L'Oreal

Philips

Lucent

Schering Plough

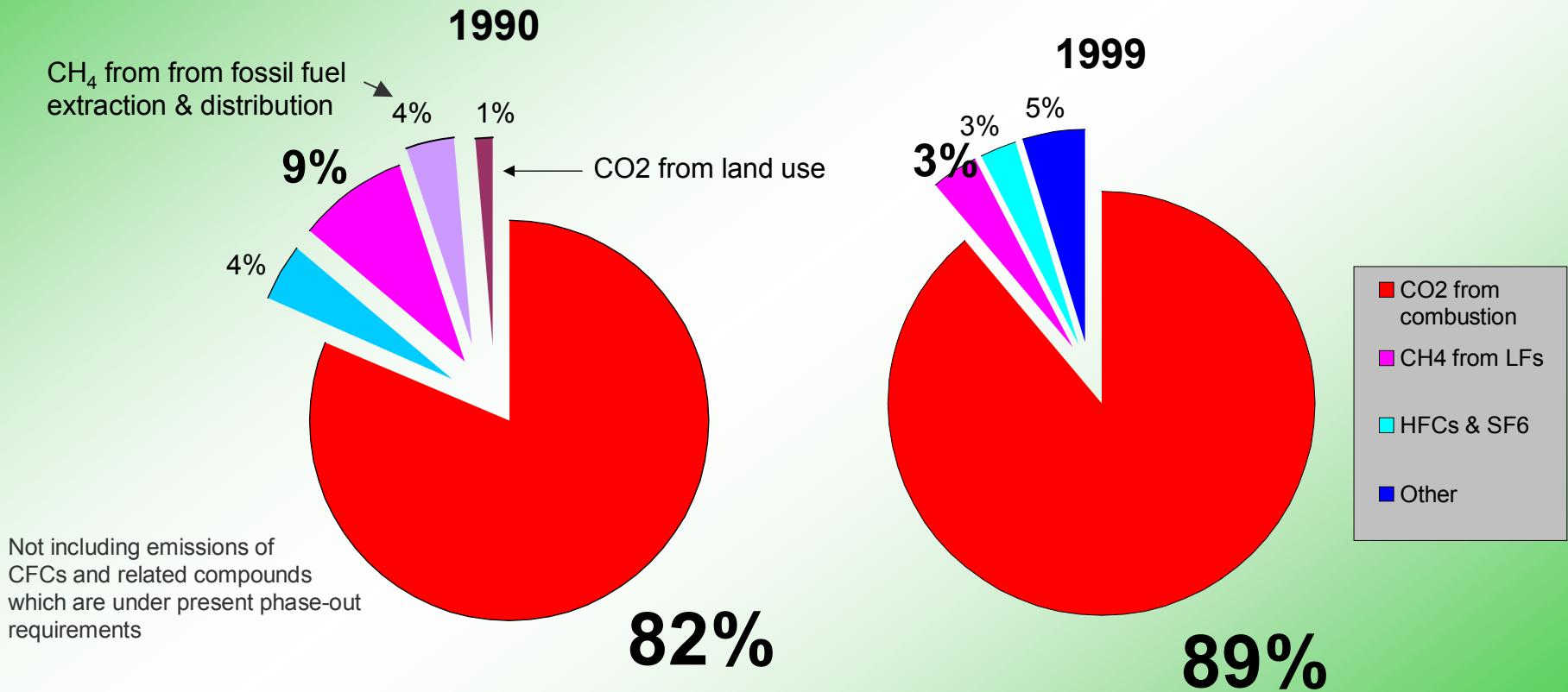
Lakehurst Naval Air Station

Jersey Central Power & Light

PSE&G

The Nature Conservancy

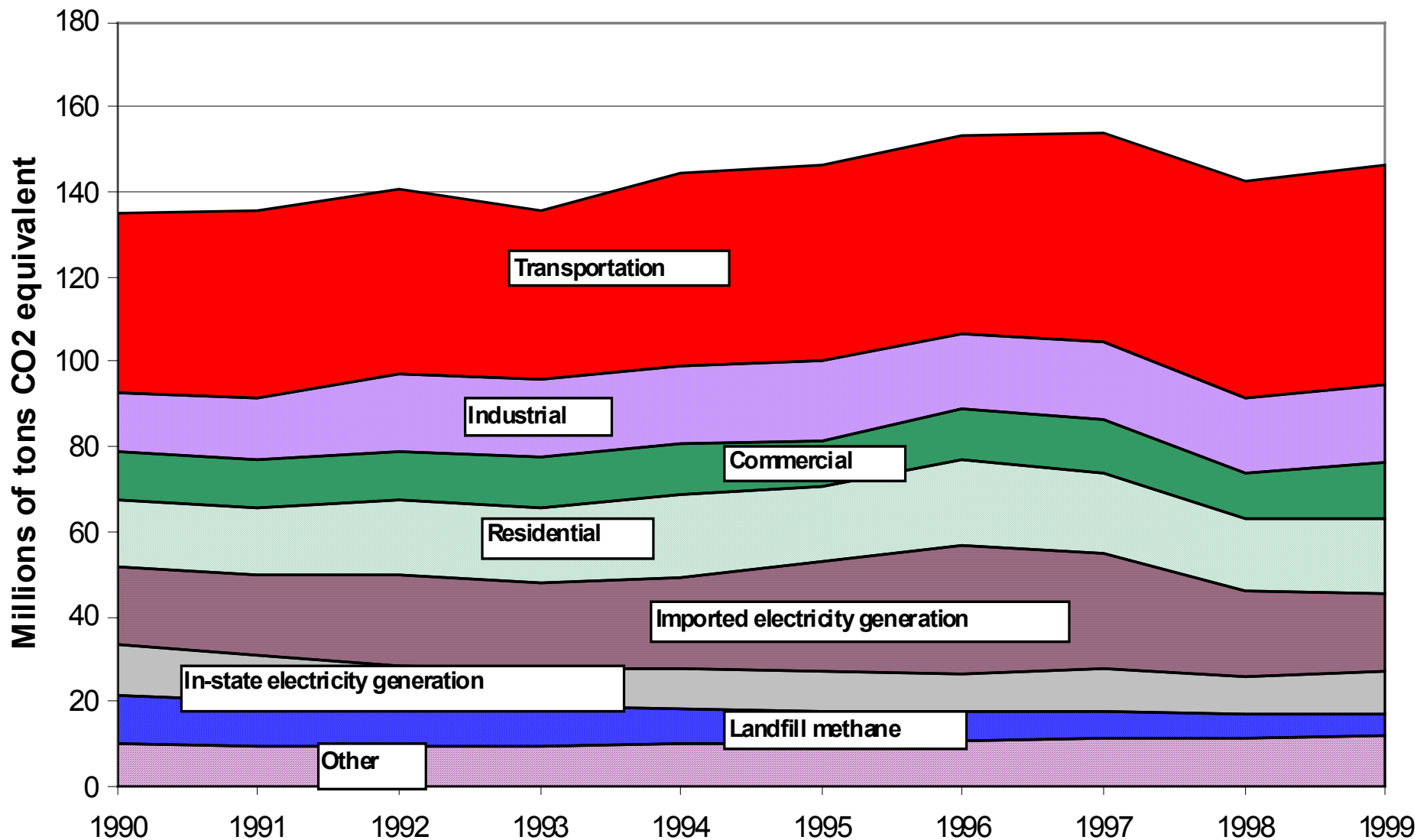
Greenhouse Gas Emissions by Source 1990 compared to 1999



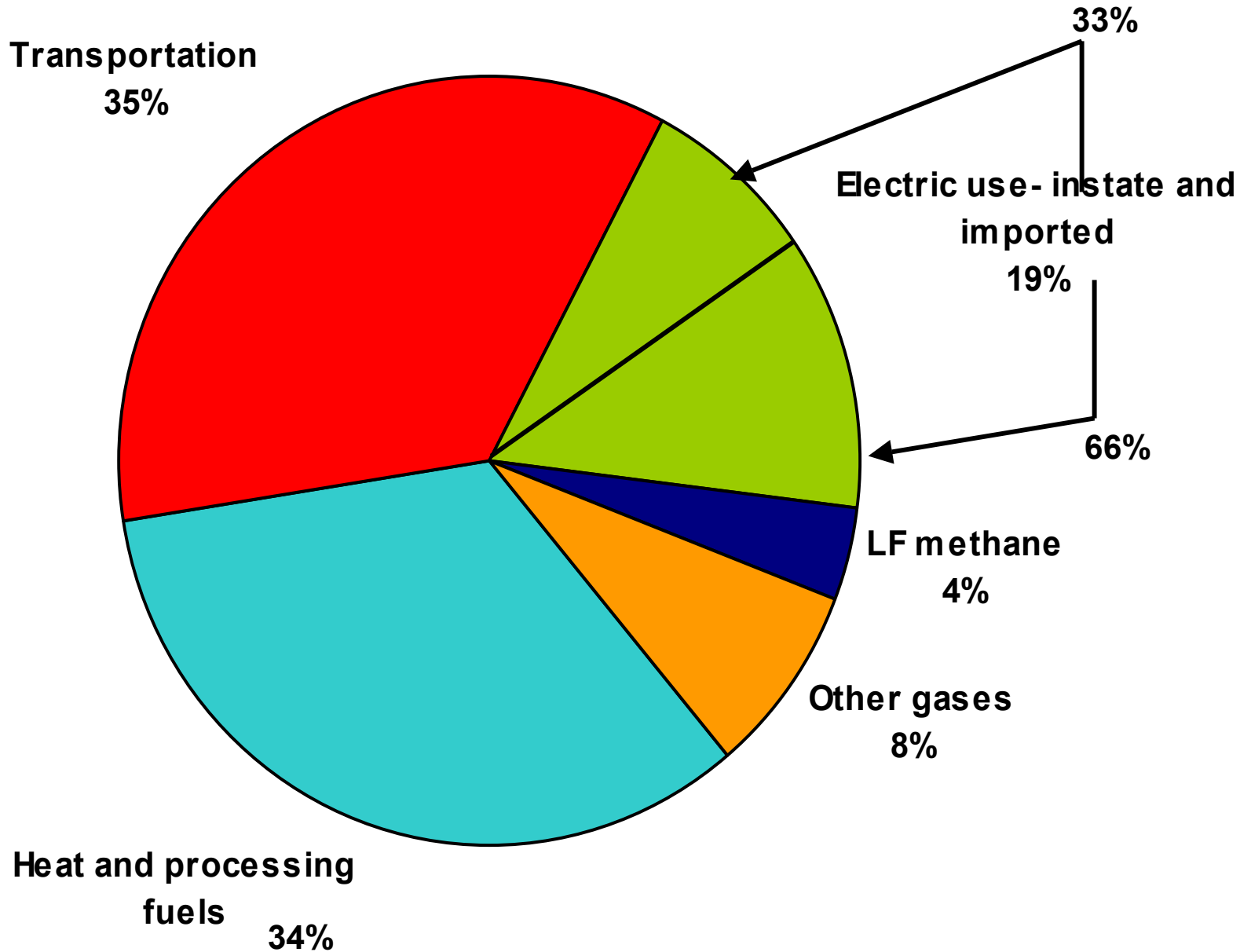
Fossil Fuel combustion from stationary sources and transportation are largest contributors to greenhouse gases

NJ GHG emissions; CO₂ equivalents, by sector

based on US DOE/EIA data (fuels), NJDEP data (LF methane),
and USEPA data (HFCs, etc. in "other" category)



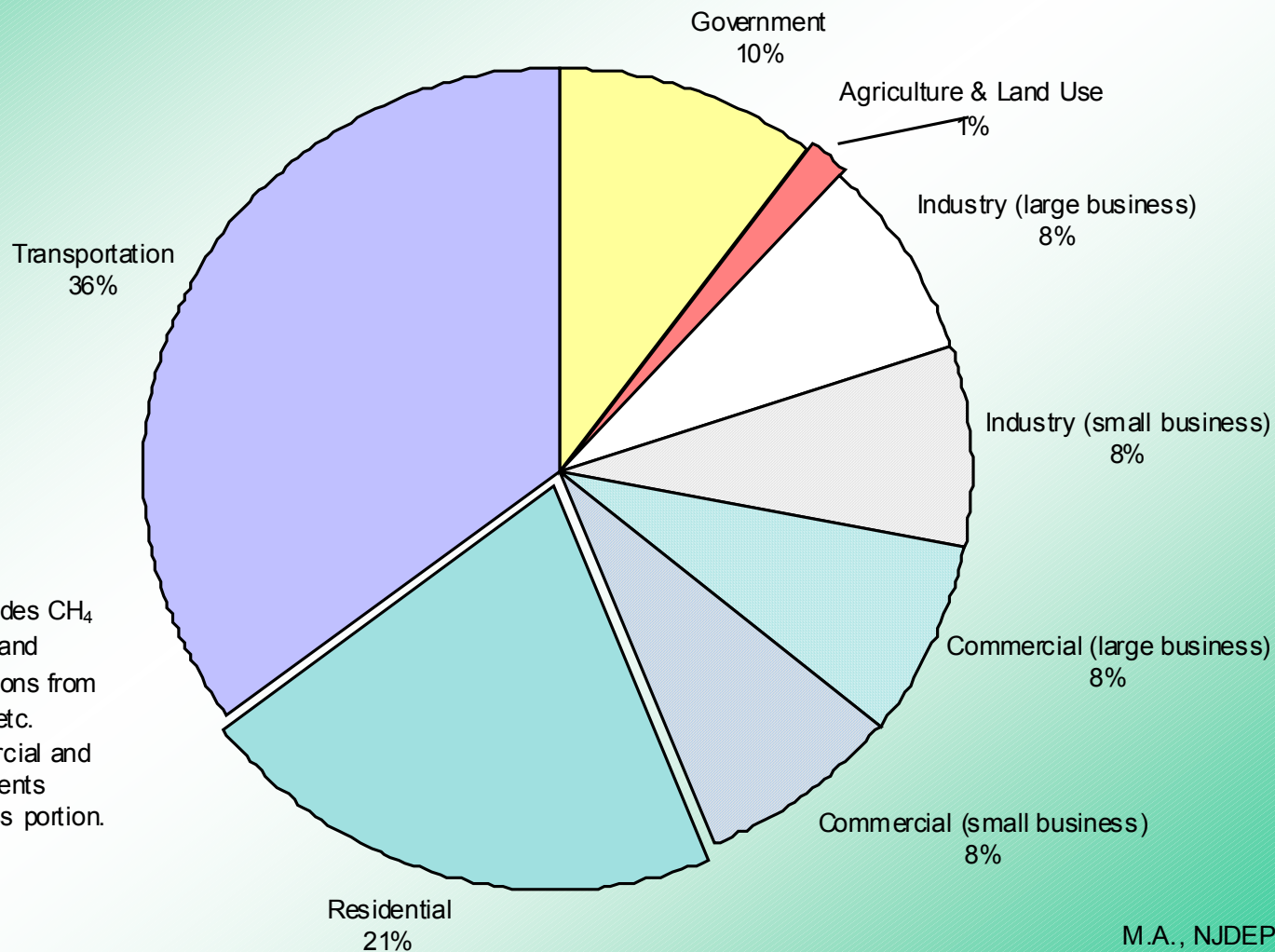
New Jersey CO2 by Source 1999



Greenhouse Gas Emissions; New Jersey

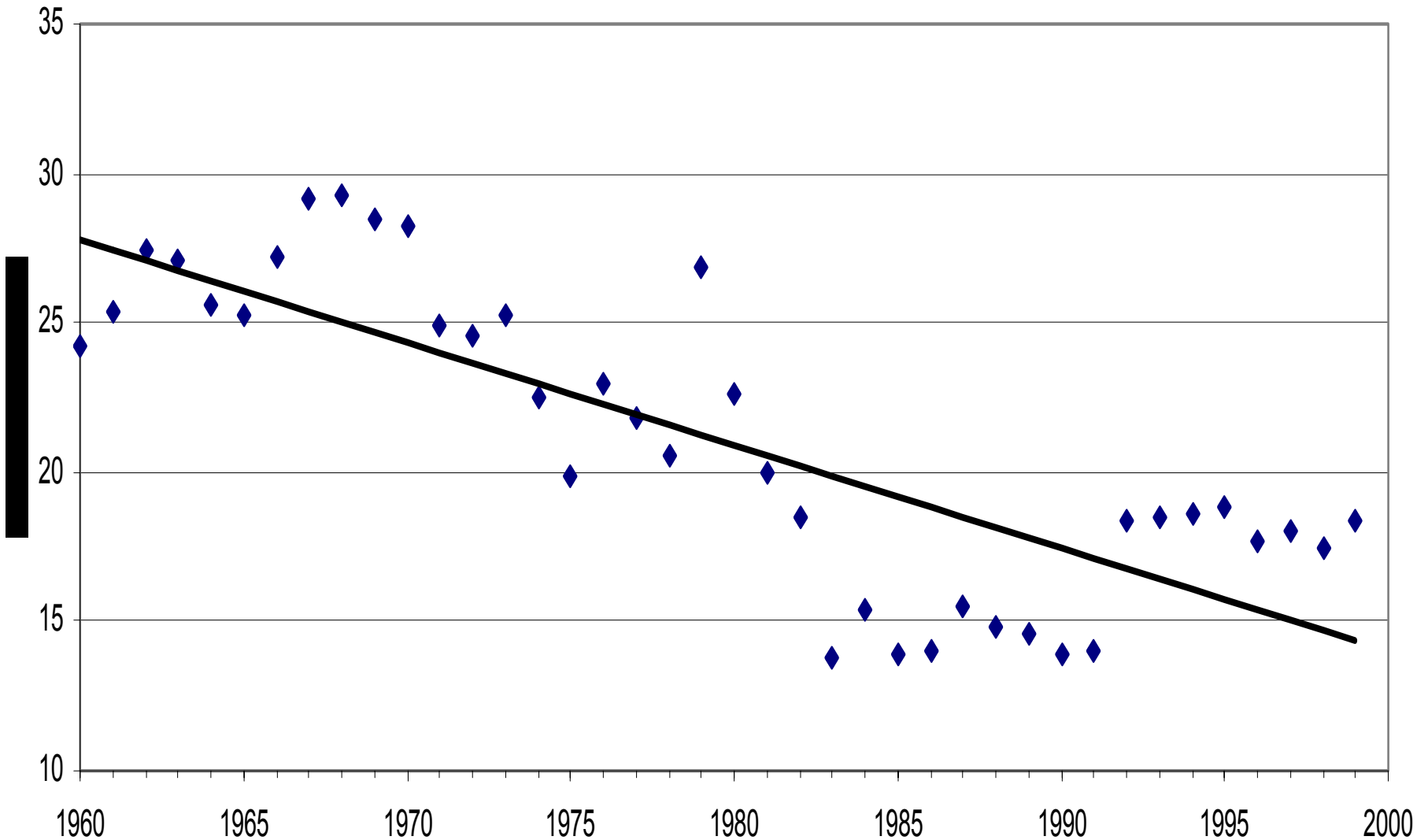
CO₂ equivalents

Based on 1990 emissions inventory
and more recent estimates for some sectors



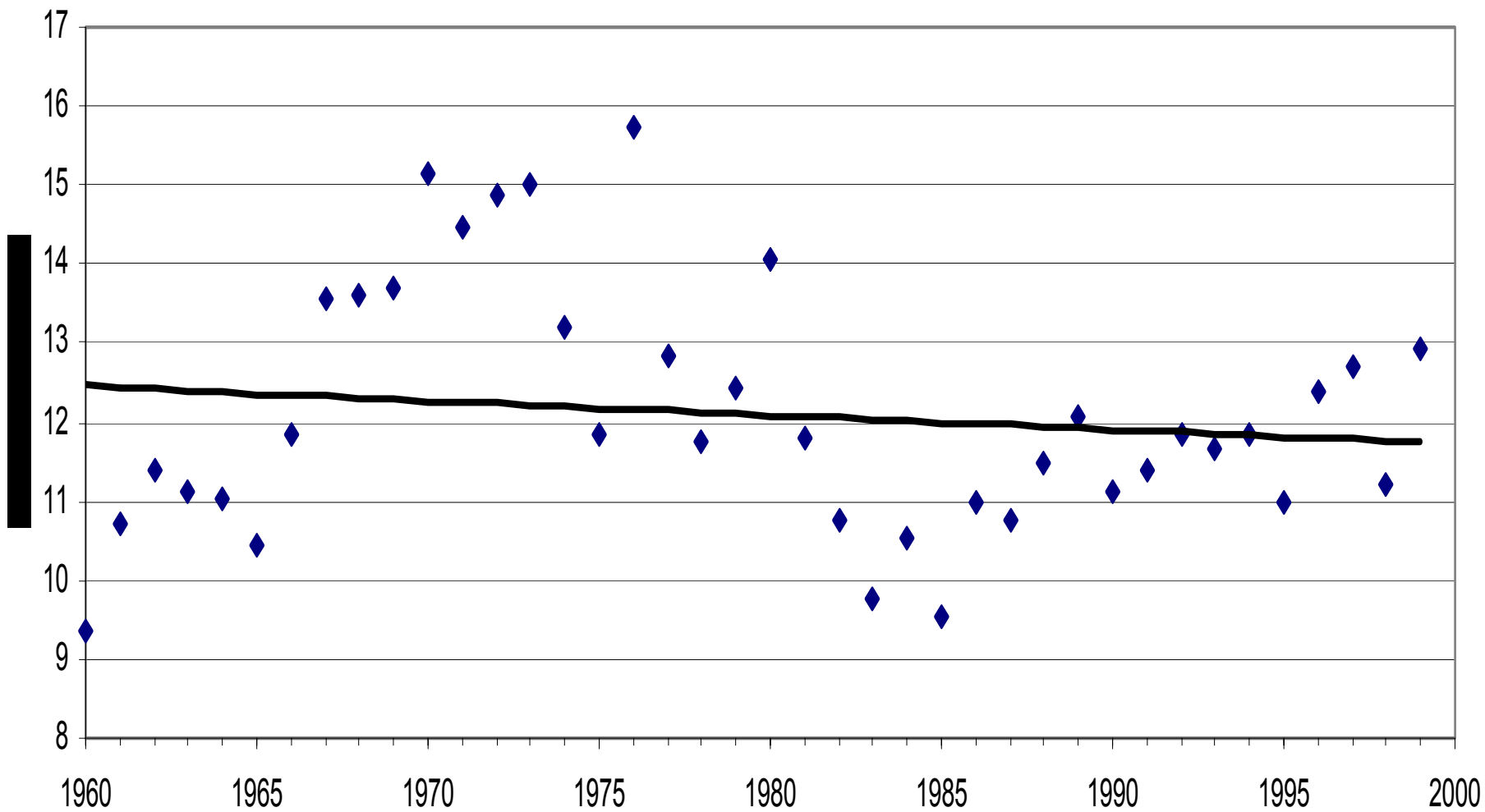
Industrial sector New Jersey CO₂ emissions

and best-fitting linear trend; based on US DOE/EIA data



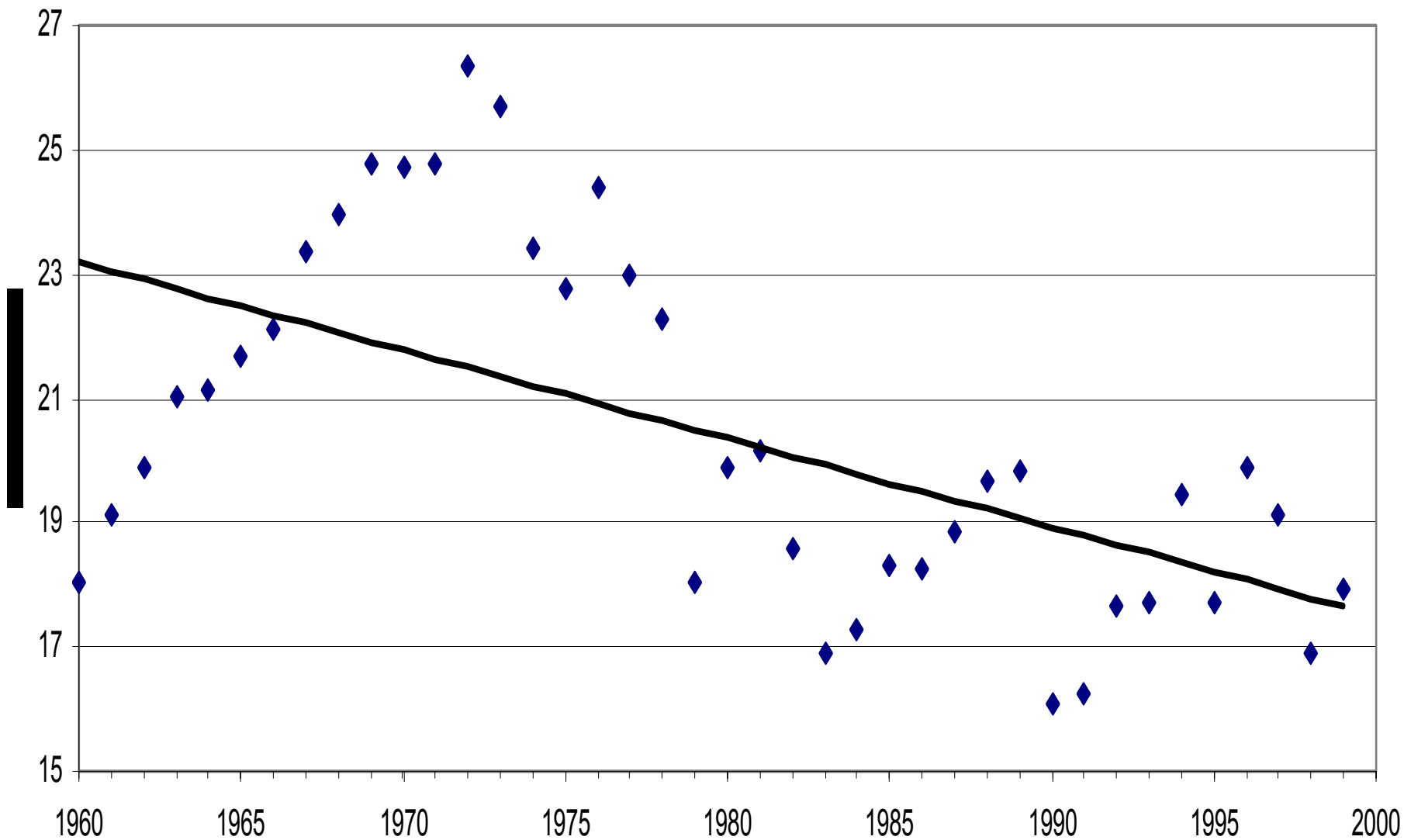
Commercial sector New Jersey CO₂ emissions

and best-fitting linear trend; based on US DOE/EIA data



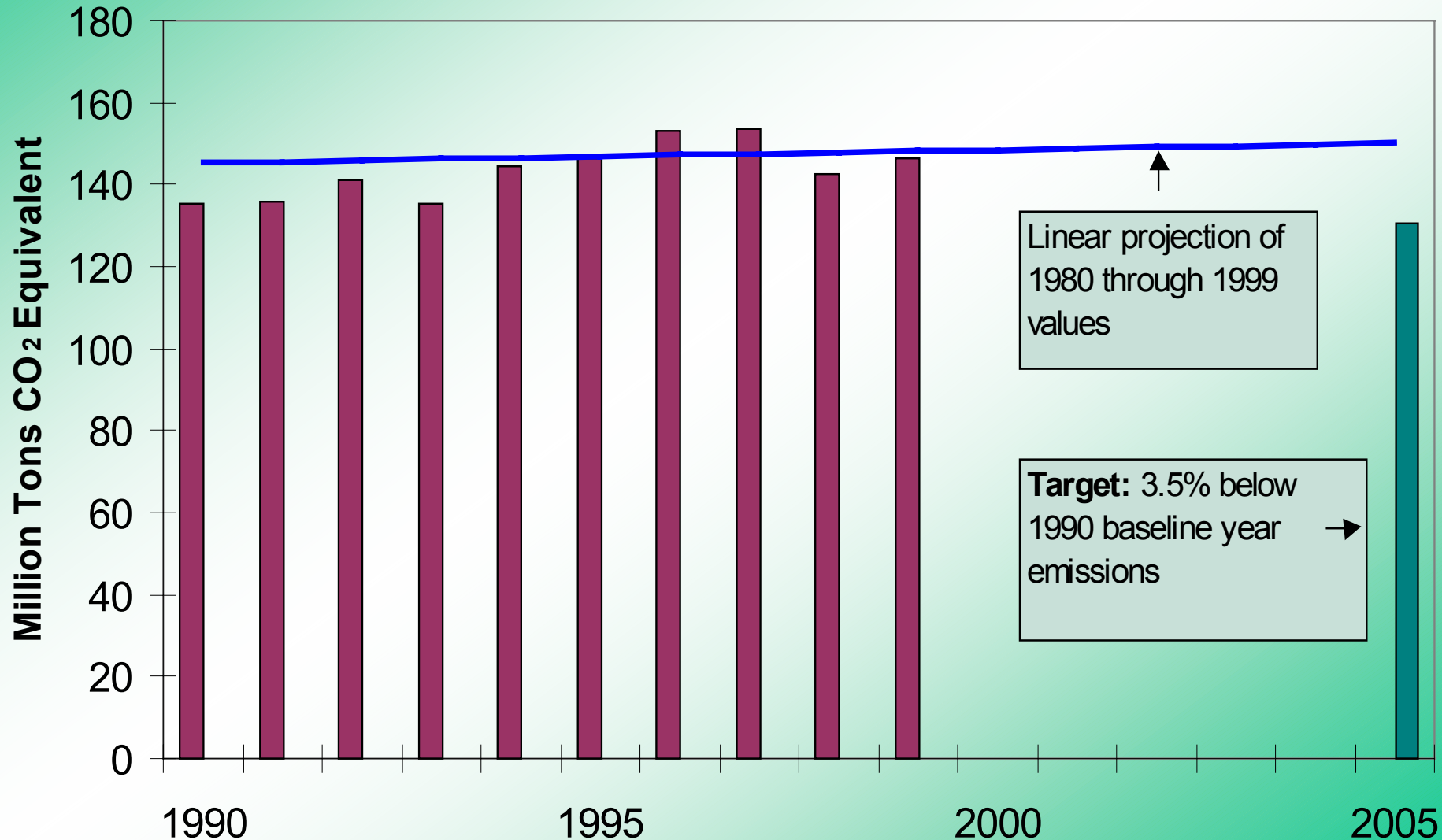
Residential sector New Jersey CO₂ emissions

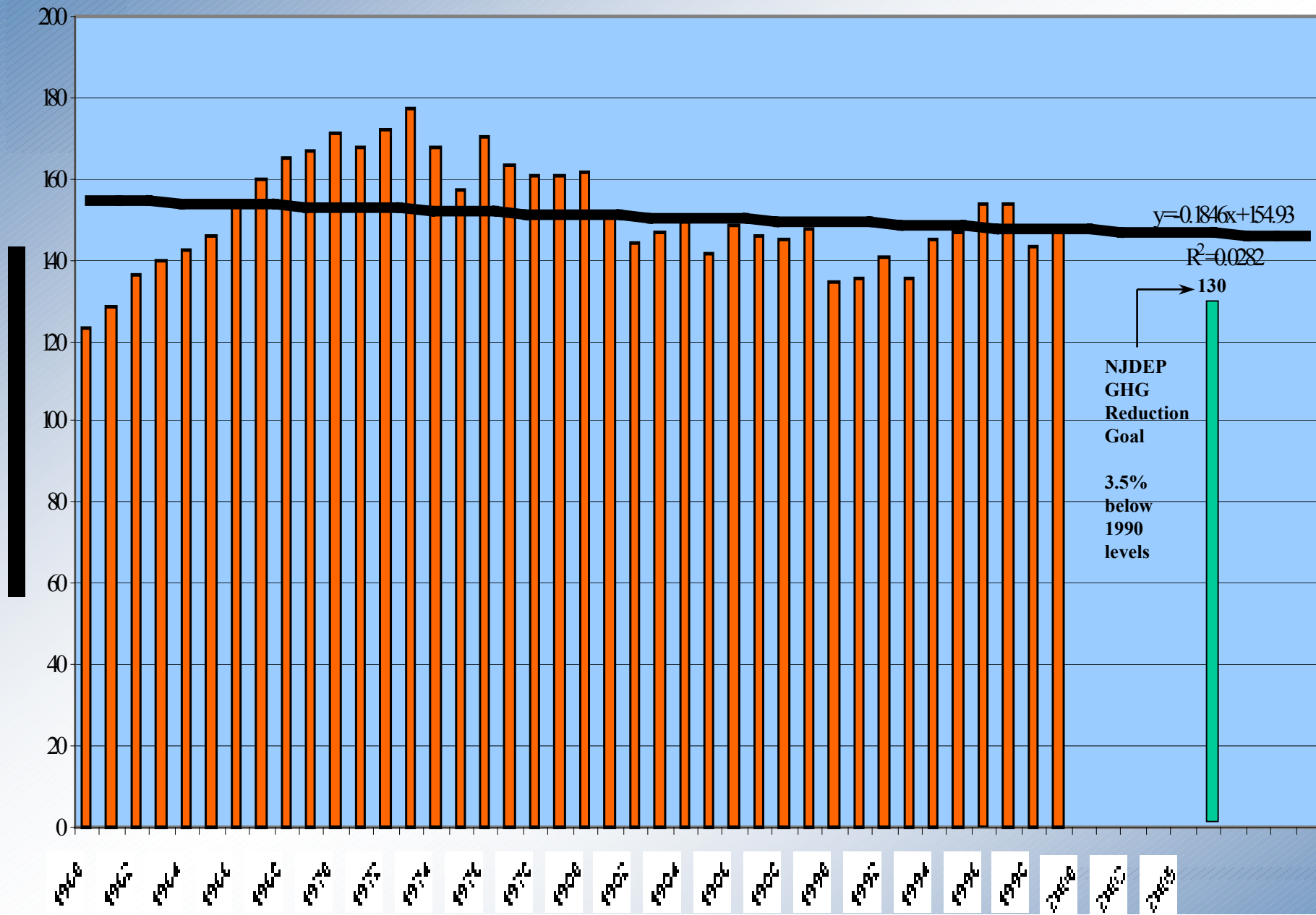
and best-fitting linear trend; based on US DOE/EIA data



NJ Greenhouse Gas Emissions and Target

Based on from US DOE/EIA & USEPA E-GRIDdata and
NJDEP solid waste data





Energy Dereg Act – RPS

**Class I Renewables - PV, Fuel cells, Wind,
LFG, Biomass**

Class II Renewables - MSWI , Small Hydro

2000 – 2.5% Class I or II

2012 – 6% (2.5% Class I or II & 4% Class II

Potential Avoided Emissions if new Class I

2012 – 18,000,000 tons of avoided CO2

50 Kt NOx, 90 Kt SO2, 4 t Hg

Lower potential if RPS supplied by all existing sources in PJM

Energy Dereg Act – SBC Funding

**3 –year \$358 million EE & RE buy-down
75% for EE and 25% for RE**

Energy Efficiency

1,824,000 t of CO2

5,325 t of NOx

8,510 t of SO2

0.04 t of mercury

Renewable Energy

Customer sided

6 MW Class I RE – 70,000 MWh

760,000 tons of CO2

Grid –connected

33.75 MW Class I RE – 1,117,000 MWh

1,200,000 t of CO2

**This includes committed and installed projects for 2001 and 2002
Some projects that are committed funding may not be installed**

INDUSTRIAL SECTOR

Preliminary saving - reporting to date 1605b VOLUNTARY REPORTING

- **L'Oreal 55.5% reduction in GHGs with 60% increase in production**
 - **Schering Plough 37% reduction in CO2 and 51.8% reduction in CH4**
 - **Lakehurst Naval Air Engineering Station 35% reduction in GHGs**
 - **Johnson & Johnson 18% reduction in CO2 and a 22% reduction in Nox**
 - **Dupont 50% reduction in GHG (31% Fluorinated -- Compounds 29% energy efficiency**
-

Total 1,100,000 Metric tons of CO2 reduction

Sustainability Covenant NJDEP & PSEG

- Sets goal for a 15% reduction in 1990 CO₂ rate (lbs/MWh) from all NJ PSEG Fossil's EGU by 2006
- 1706 lb/MWh to 1450 lb/MWh
- Semi annual reporting
- Reporting on collateral benefits
- Reporting on other CO₂ reductions
- Estimated 20 MM ton reduction *
- 1st year 5% reduction 3 M ton avoided

* Through 2012 if NJ electricity user purchase PSEG clean product

Commercial Sector

College & Universities -preliminary reporting*

1990 to 2000

- All 56 College and University Presidents signed onto NJDEP sustainability covenant
- First year reporting: **14 Colleges/Universities representing 45% of the C&U population**
 - 17% increase in floor space
 - 14% increase in students/staff
 - 0% increase in GHG emission from 1990 to 2000
 - 70lbs of CO₂/Ft² to 35 lbs of CO₂/ft²
 - Green Design Team – USGBC LEED (20% increase in energy efficiency in design and construction –transportation issues)

Government Sector

- **New Jersey has purchased a 12% Green Power set aside (1,000,000 MWh)**
- **Green e certified - 50% renewable**
- **2nd Year of contract**
- **Over 200 million kWhs**
- **46,000 tons of avoided CO₂, 95 tons of avoided SO₂, 114 tons of avoided NO_x**
- **\$1.9 million in avoided environmental costs.**

Government Sector

Mandatory Reporting of GHG

- **Proposed Feb. 2002**
- **Scheduled to be Adopted**
- **CO₂ and CH₄**
- **Direct emissions**
- **Currently Required to Submit an Annual Emissions Inventory**
- **25 tons of VOC**

Commercial Sector K-12 public Schools

NJSBA Manual for Positions and Policies on Education

NJSBA Policy FC 5141 Health – To provide a safe and healthy environment for students

All reasonable efforts to implement voluntary programs and initiatives to accomplish the reduction of greenhouse gas emissions should be supported

Commercial Sector

K-12 public Schools

Governor McGeevey's Executive Order 6 July 29, 2002

THEREFORE, I, JAMES E. MCGREEVEY, Governor of the State of New Jersey, by virtue of the authority vested in me by the Constitution and by the Statutes of this State, do hereby ORDER and DIRECT....

- 4. All new school designed shall incorporate the guidelines developed by the United States Green Building Council known as "Leadership in Energy & Environmental Design ("LEED"), Version 2.0 to achieve maximum energy efficiency and environmental sustainability in the design of schools.**

New Jersey GHG Action Plan

Transportation- Current Progress

- Enacted Inspection & Maintenance Program
- On-going AVF/ATV Task Force
- Increase State fleet AFV – NJBPU Rebate (PORF)
- NJ Transit hybrid buses (CMAQ)
- Expand state NG fueling stations (CMAQ)
- Expand Bio diesel program
- Mass Transit Improvements
- Fuel Cell Demo Car Tour del Sol



New Jersey GHG Action Plan

Transportation- Future Programs

- **Smart Growth EO 38**
 - **EO38 Super Incentives within NJDCA**
 - **Smart Growth Regulatory Reform within NJDEP**
 - **NJDOT Statewide Transportation Plan**
 - **Congestion Management**
 - **TMA Clear Air Programs \$ 8M**
 - **Hybrid Bus Acquisition**
 - **Emissions Control-Retrofit bus fleet**
- **Colleges & Universities Pilot on Smart Transit**
- **Fuel Cell work group**



Transportation- GHG Reductions The Tough Nut to crack

Because Transportation Planning
Systems build to the trend.
They are not designed to reverse them



Not all VMTs are equivalent

Transportation sector New Jersey CO₂ emissions

and best-fitting linear trend; based on US DOE/EIA data

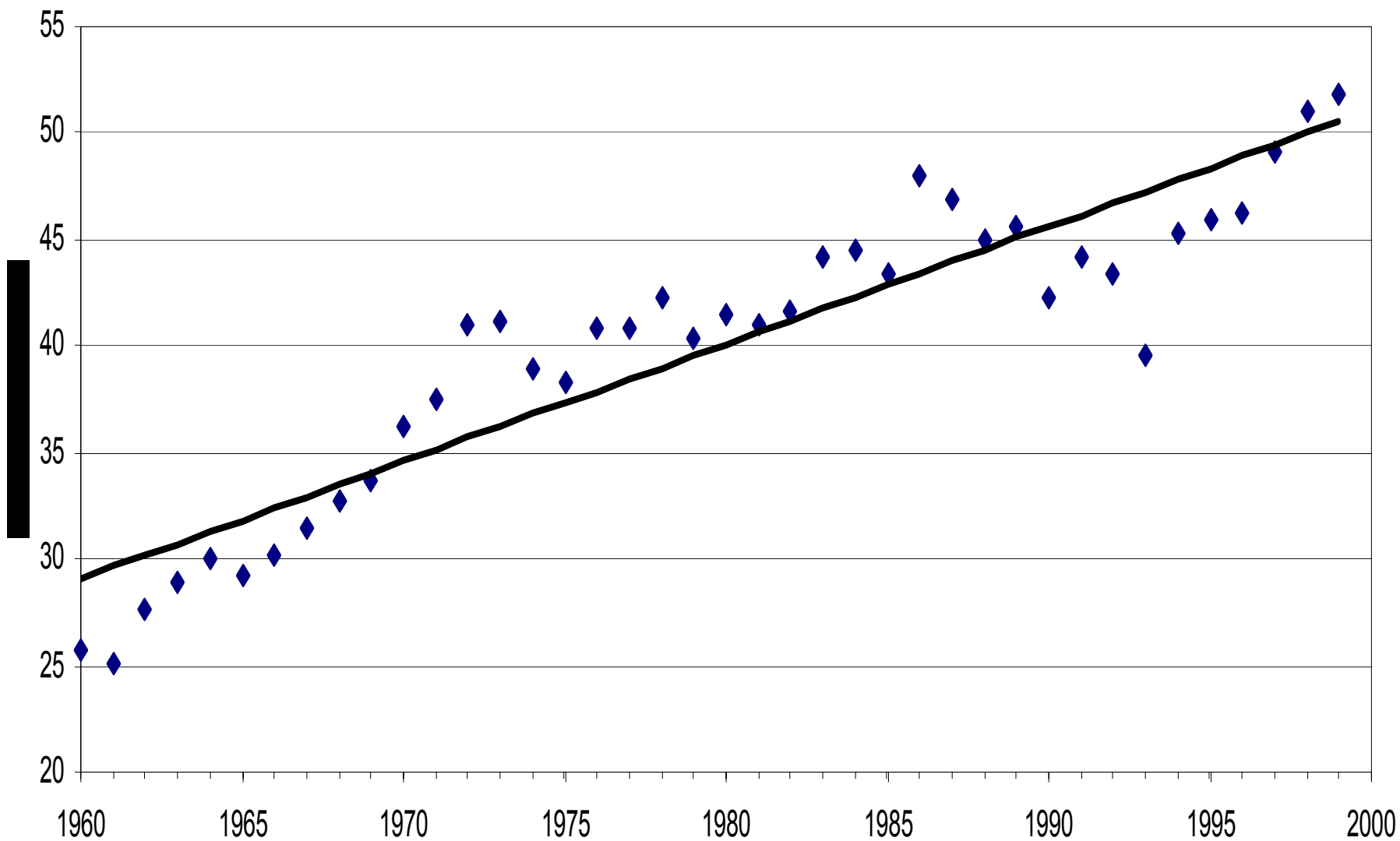


Chart T-1: Transportation Sector Energy Use & Intensity
relative to Vehicle Miles Traveled

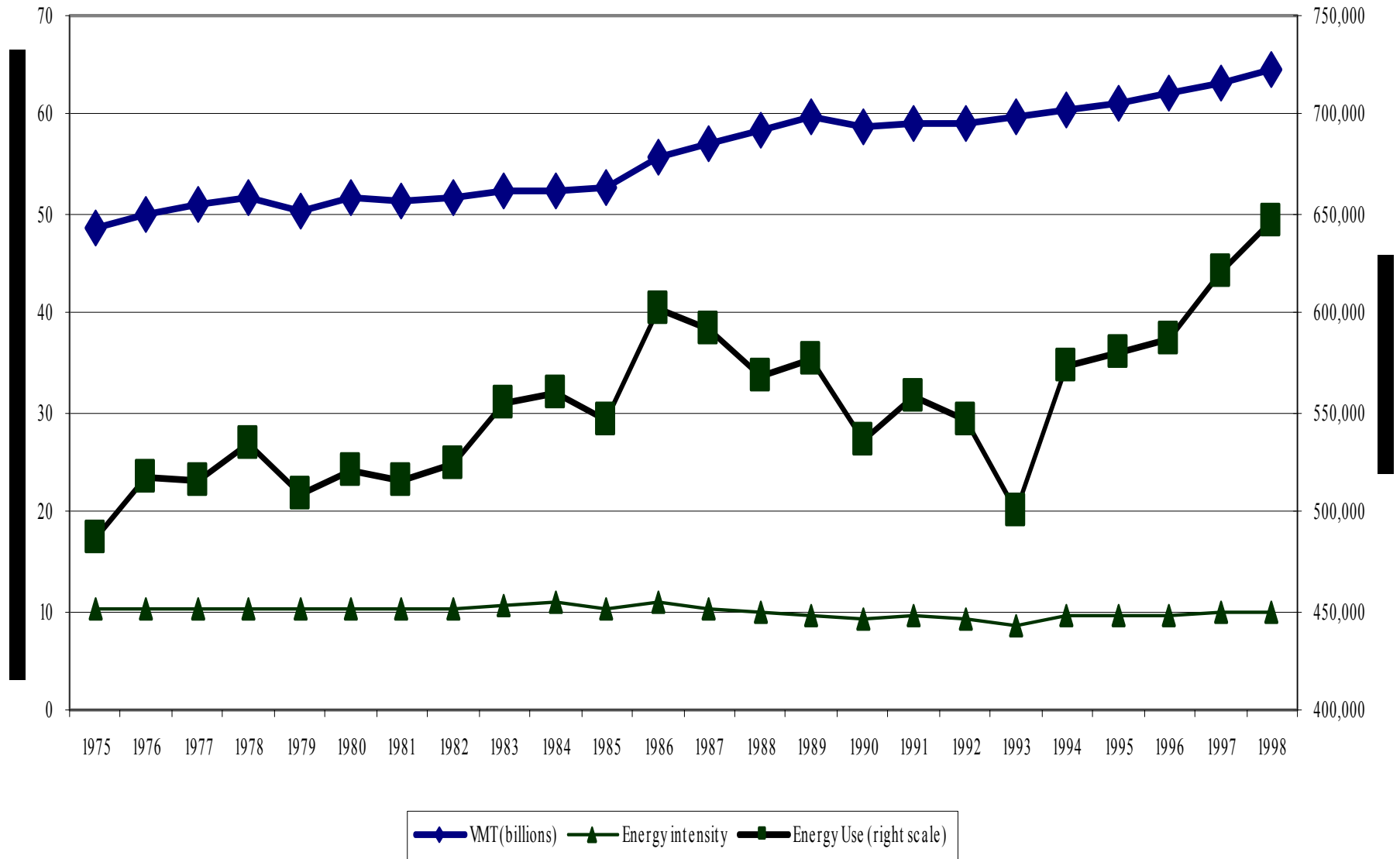
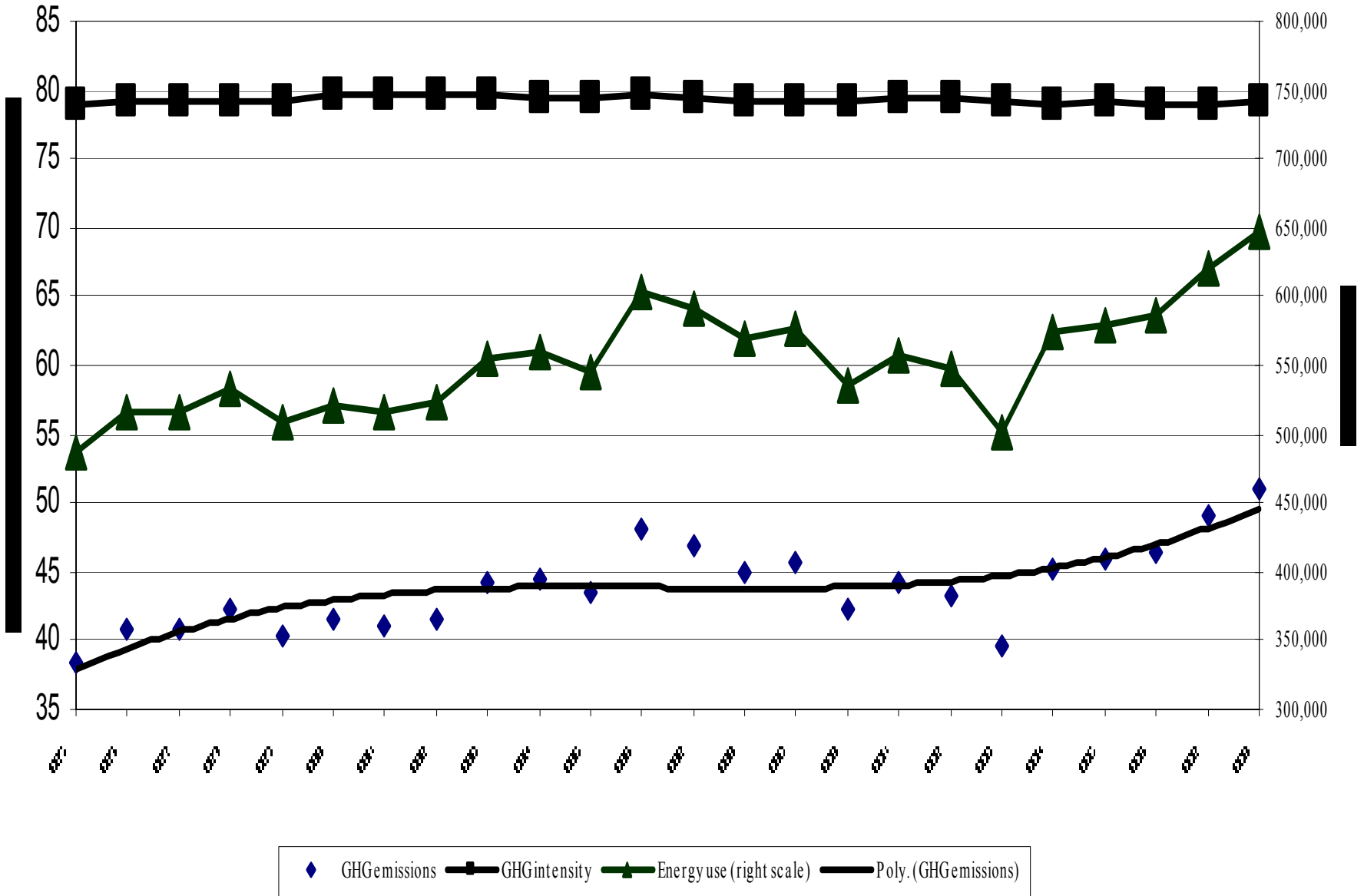
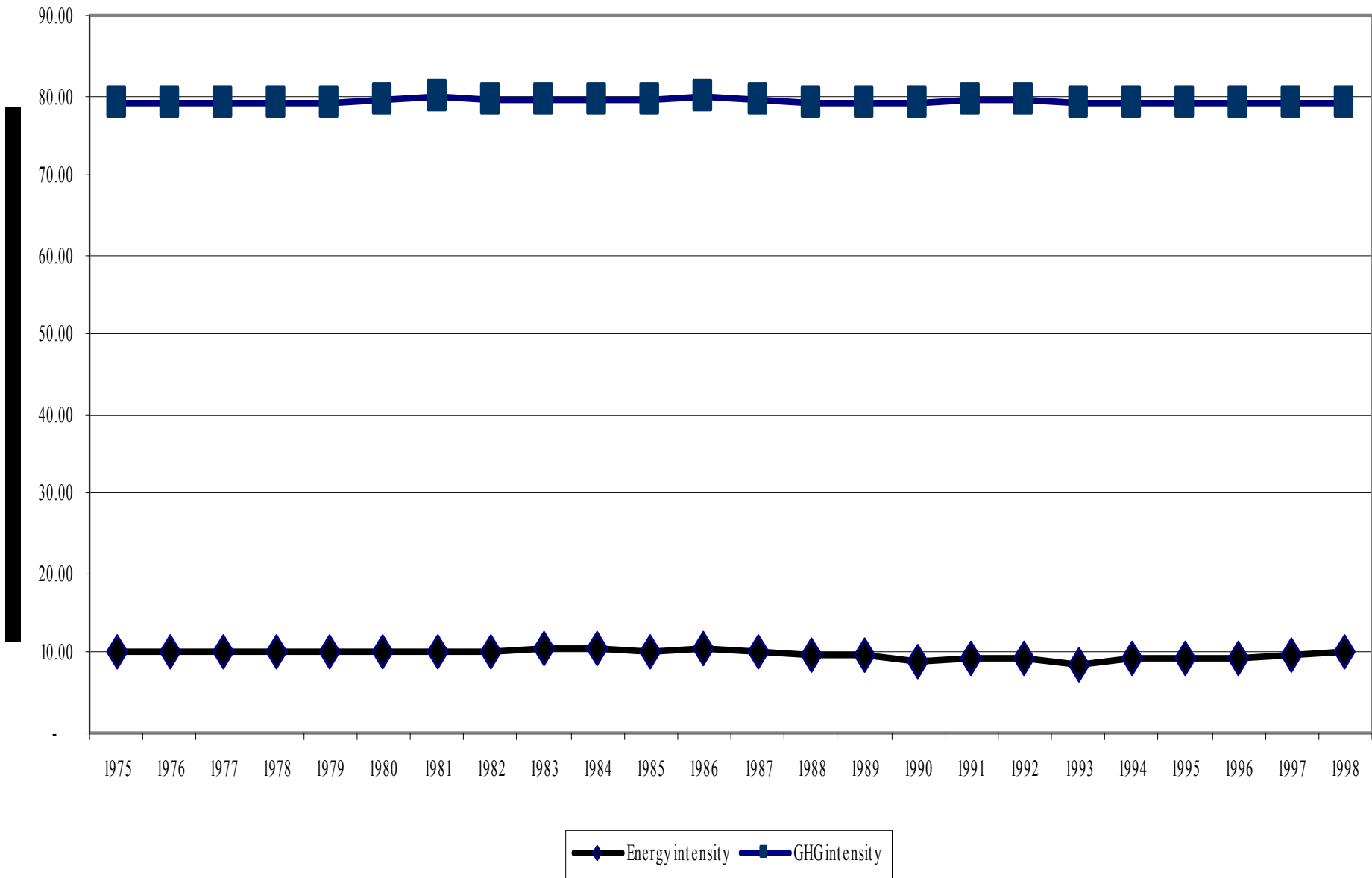


Chart T-2: Transportation Sector GHG emissions
and Intensity relative to Energy Use

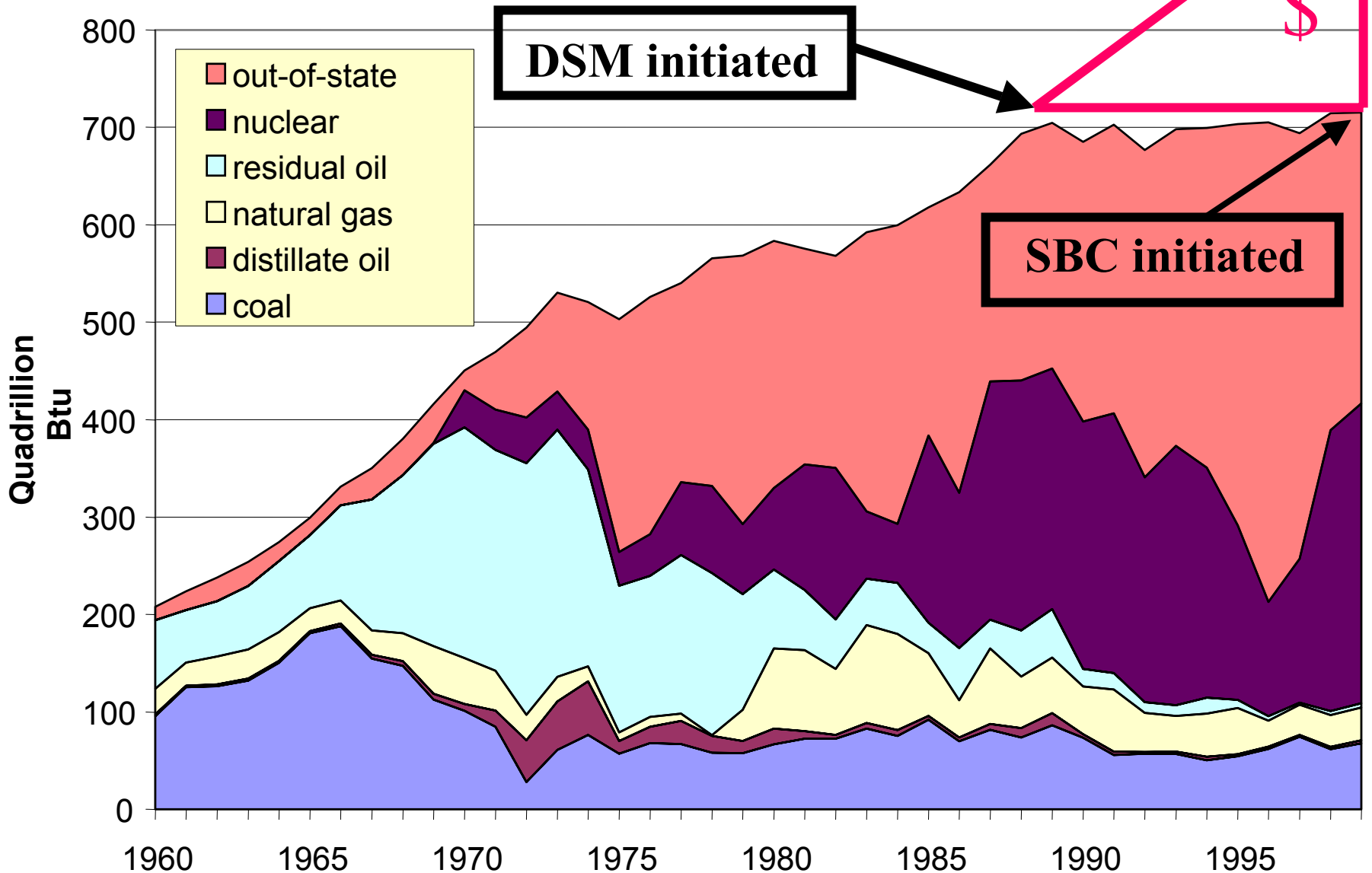


Transportation Sector



Energy consumed in production of electricity used in NJ, by source type, 1960 to 1999

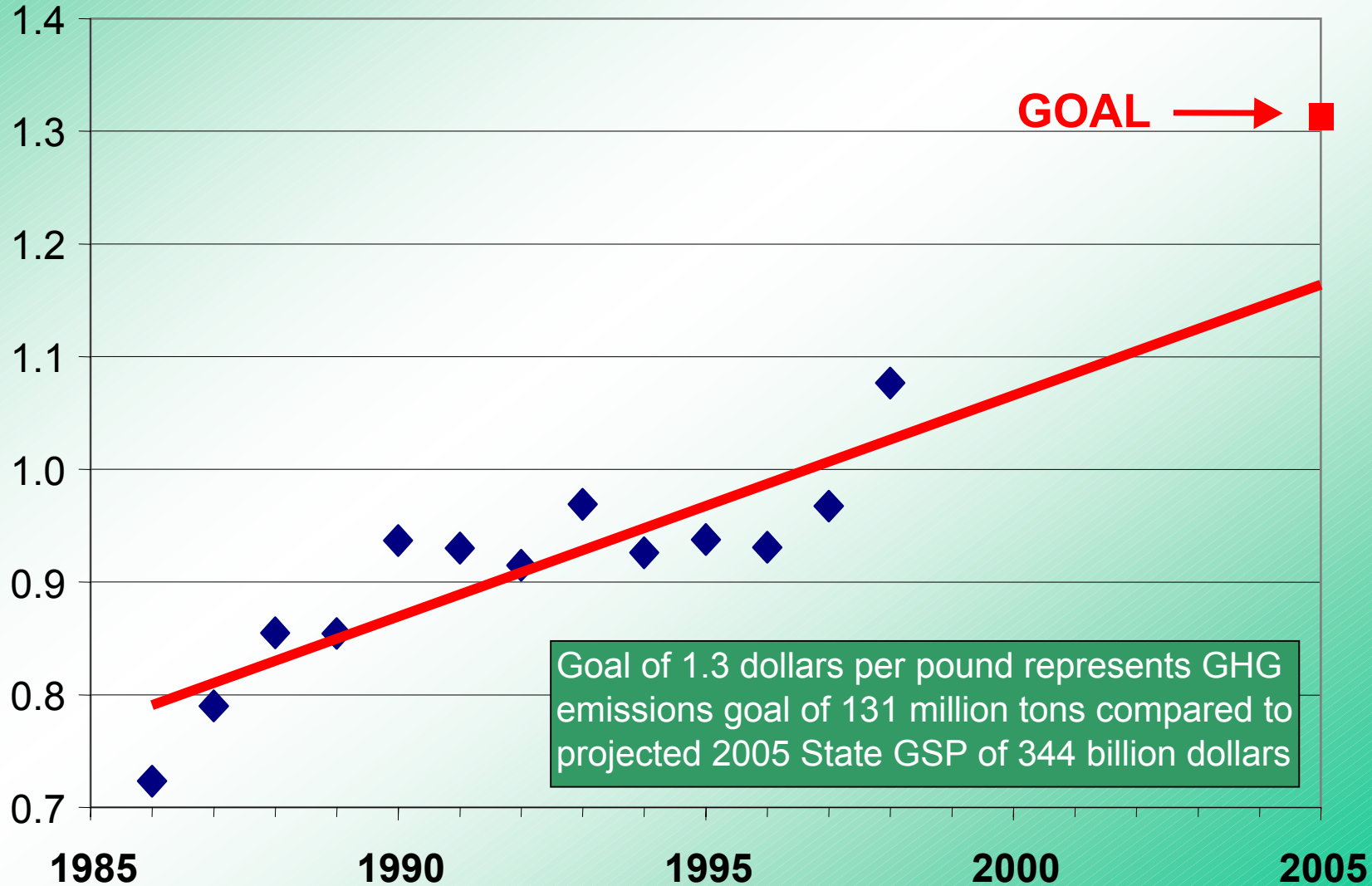
from US DOE/EIA data



Dollars of Economic Output per Pound of Greenhouse Gas Emissions

from USDOE/EIA, USEPA, NJDEP, and USDOC/BEA data

Gross state product, in constant 1996 dollars,
per pound of CO₂ equivalent emissions



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